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UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Technical Standards Committee "A"
(Electric)

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Supplement No. 1, October 1984, to

REA Bulletin 43-5

LIST OF MATERIALS ACCEPTABLE FOR USE ON
SYSTEMS OF REA ELECTRIFICATION

MAR 6 1985

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of July through September, 1984. The following changes should be made in order to keep it up to date. Pages with a colon between are on the same sheet, both being changed.

<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>	<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>
a-1, a-2	a-1, a-2	cm, cp	cm, cp
a(1)	a(1)	cy-1	cy-1
k-1	k-1	du	du
k(3), k(3.1)	k(3)	ea-2	ea-2
p-1	p-1	ea(1)	ea(1)
p-3, p-4	p-3, p-4	eh, ei	eh, ei
p-7	p-7	ej	ej
v	v	eq(2.1)	eq(2.1)
ae(1)	-	eq(2.3)	eq(2.3)
ae(2)	ae(Cond)	fn	fn
al	al	gj	gj
ax-1	ax-1	zz-1, zz-2	zz-1, zz-2
bo	bo	Uae(1)	Uae(1)
br	br	Ugu	Ugu
bx	bx	Uhv-1	Uhv-1
bz(Cond)	bz(Cond)	Uhv-2	Uhv-2
cg-3	cg-3	Uhv-5	Uhv-5
cg-4, cg-5	cg-4	Uhv(1)	Uhv(1)
cg(1)	-	Uja(1)	Uja(1)
ci	ci	GP-6	GP-6
		GP(6)	GP(6)

a - Insulator, pin type

Specifications

5 kV - used on 2.4 kV and
4.16/2.4 kV systems



	Plain	Radio- freed
ANSI Class 55-2	50 kV	45 kV
Flashover, dry	25 kV	25 kV
Flashover, wet	5 in.	5 in.
Leakage distance	1 in.	1 in.
Pinhole diameter		

Chance	C905-1302*
**McGraw-Edison	NP8D8*
Ohio Brass	12847
Porcelain Products	
(Knox)	253
Victor Insulators, Inc.	8

12.5/7.2 kV - used on 12.5/7.2
and 13.2/7.62 kV systems



	Plain	Radio- freed
ANSI Class 55-3	65 kV	55 kV
Flashover, dry	35 kV	30 kV
Flashover, wet	7 in.	7 in.
Leakage distance	1 in.	1 in.
Pinhole diameter		

Chance	C905-1303*
Joslyn (Pinco)	L63R*
McGraw-Edison	NP9D8*
Ohio Brass	38148*
Porcelain Products	
(Knox)	261-S*
Victor Insulators, Inc.	5*

15 kV - used on 12.5/7.2
and 13.2/7.62 kV systems where
greater insulation is needed



	Plain	Radio- freed
ANSI Class 55-4	70 kV	65 kV
Flashover, dry	40 kV	35 kV
Flashover, wet	9 in.	9 in.
Leakage distance	1 in.	1 in.
Pinhole diameter		

Chance	C905-1304*
Joslyn (Pinco)	L2064R*
McGraw-Edison	NP21D8*
Ohio Brass	38149*
Porcelain Products	
(Knox)	366-S*
Victor Insulators, Inc.	6*

*Radio-freed

**Available in white as indication of neutral. White insulators are non-radio-freed.

Radio-freed and non-radio-freed insulators made by these manufacturers and in these styles are acceptable.

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

a - Insulator, pin type
(Radio-freed)

Specifications

Used on 24.9/14.4 kV
distribution lines.

Radio noise free, metal
thimble



ANSI Class 56-1
Flashover, dry 95 kV
Flashover, wet 60 kV
Leakage distance 13 in.
Pinhole diameter 1-3/8 in.

Chance	C906-1311
Joslyn (Pinco)	L1123-R
Ohio Brass	38246-7010
Porcelain Products (Knox)	2027-S
Victor Insulators, Inc.	127-R

Used on 33 - 34.5 kV
transmission lines.

Metal thimble



ANSI Class 56-3
Flashover, dry 125 kV
Flashover, wet 80 kV
Leakage distance 21 in.
Pinhole diameter 1-3/8 in.

Chance	C906-1303
Joslyn (Pinco)	L75-R
Ohio Brass	38223-7010
Porcelain Products (Knox)	2045-S
Victor Insulators, Inc.	245-R

Used on 44 - 46 kV
transmission lines.

Metal thimble



ANSI Class 56-4
Flashover, dry-wet 140-95 kV
Leakage distance 27 in.
Pinhole diameter 1-3/8 in.

Ohio Brass	38255-7010
Victor Insulators, Inc.	225-R

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

a - Insulators, pin type
(Radio-freed)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
*Chance C906-1321 24.9/14.4 kV ANSI Class 56-1	1274 2/9/84	To obtain experience.
*McGraw-Edison NP2T8 24.9/14.4 kV ANSI Class 56-1	1205 2/5/81	To obtain experience.
*Victor Insulators, Inc. 27R 24.9/14.4 kV ANSI Class 56-1	1235 5/27/82	To obtain experience.

*Does not have metal thimble.

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

b
July 1984

b - Pin, pole top, steel

DISTRIBUTION

	<u>7.2/12.5 or 7.62/13.2 kW</u>	<u>14.4/24.9 kW</u>
Pin length, inches :	20	20
Thread diameter, inches:	1	1-3/8
Hole spacing, inches :	8	8
REA Specifications :	D-3	DT-3
Chance	2199	2195
Dixie	D-2172	D2195
Joslyn	J740	J720
Kortick		K8086
McGraw-Edison	DP19P6	DP19P5
Utilities Service	36606F-REA	36652

Pins listed below have 4-1/2" offset
which eliminates the use of Item cs

Joslyn	J25179
McGraw-Edison	DP28P1
Utilities Service	36549

TRANSMISSION

Type :	1-1/8" solid steel	Channel
Pin length, inches :	24	24
Thread diameter, inches:	1-3/8	1-3/8
Hole spacing, inches :	8	8
REA Specifications :	None	DT-3
Chance		2196
Dixie	D2125	
Joslyn		J824
Kortick		K8087
McGraw-Edison		DP19P8
Utilities Service		36653F

NOTE 1. Pole top bracket (Item eb) and post insulator (Item ea) may be substituted for pole top pin (Item b) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

2. Flared type pins may be mounted with either side against the pole.

July 1984

j - Screw, lag

Applicable Specifications: Edison Electric Institute
Specification TDJ-3 1964,
"Standards for Lag Screws"

Applicable Sizes : 1/2 inch diameter, 4 inch length
1/2 inch diameter, 5 inch length
5/8 inch diameter, 4 inch length
5/8 inch diameter, 5 inch length

The following manufacturers have shown compliance with the applicable specifications for lag screws:

A. B. Chance Company
Dixie Electrical Manufacturing Company

Joslyn Manufacturing and Supply Company
Kortick Manufacturing Company
McGraw-Edison

Utilities Service Company



k - Insulators, suspension

ANSI Class	52-9	52-1	52-4	52-3
Type	Clevis	Clevis	Clevis	Ball & Socket
Disc Diameter	4-1/4"	6"	9" or 9-1/2"	9" or 9-1/2"
M & E Rating, lbs.	10,000	10,000	15,000	15,000
Leakage, inches	6-3/4	7	11-1/2	11-1/2
Flashover; kV: Dry-Wet	60 - 30	60 - 30	80 - 50	80 - 50
NOTES	(3)(4)	(3)(4)	(5)	(2)

<u>Manufacturer</u>	<u>Catalog Number</u>			
Chance	C907-1009	C907-1001	-	-
Joslyn (Pinco)	L1814	L1510	L-970	L-960
Lapp	6815-70	6605	9100	9000
Locke	16044	16583	15S410	15S409
Ohio Brass	42399	32433	48019	48008
Porcelain Prod. (Knox)	84300	86012	-	-
Sediver	CT-4R2	-	-	-
Victor Insulators, Inc.	817	804	-	-

Notes:

- (2) To be used only on transmission lines.
- (3) To be used only on distribution lines.
- (4) Use two insulators for 12.5/7.2 kV deadends and three insulators for 24.9/14.4 kV deadends.
- (5) Use two insulators for 24.9/14.4 kV deadends.

k - Insulator, Distribution Deadend

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Distribution deadend	965	For the purpose of gaining operating experience as follows: 1. For distribution lines only. 2. Recommended maximum working load is 5000 lbs. 3. Not recommended for use in areas subject to contamination.
Catalog No. C654-0000	4/22/71	
"Epoxilator II"		
(15 kV line-to-line)	1082	
Catalog No. C654-2500	1/22/76	
"Epoxilator II"	1129	
(25 kV line-to-line)	12/15/77	
<u>Joslyn</u>		
Distribution deadend	1074	1. For distribution lines only, up to 15 kV line-to-line voltage.
UDI 671-3002	9/25/75	
	1088	
Distribution deadend	4/15/76	1. For distribution lines only, up to 25 kV line-to-line voltage.
UDI 671-3010	1074	
	9/25/75	
	1088	
	4/15/76	
<u>Lapp</u>		
Distribution deadend	1282	1. For distribution lines only. 2. To be used only in a horizontal position on deadends. 3. Maximum working load to be 5000 lbs. 4. Not recommended to be used in areas subject to contamination.
Catalog No. 151001, 15 kV	6/21/84	
Catalog No. 151002, 25 kV		
<u>Plastigage</u>		
Distribution deadend	1158	1. For distribution lines only. 2. To obtain experience. 3. Not recommended to be used in areas subject to contamination.
H-15 kV-4	3/1/79	
H-25 kV-6	1208	
	3/19/81	

NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary.

k - Insulator, Distribution Deadend

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Salisbury</u> Distribution deadend Catalog No. 9501, 15 kV Catalog No. 9502, 25 kV	1226 1/7/82	1. For distribution lines only. 2. To be used only in a horizontal position on deadends. 3. Recommended maximum working load is 5000 lbs. 4. Not recommended for use in areas subject to contamination.
<u>Sediver</u> Distribution deadend ADI-4 15 kV ADI-6 25 kV	1286 9/6/84	1. For distribution lines only. 2. To be used only in a horizontal position on deadends. 3. Maximum working load is to be 5000 lbs. 4. Not recommended in areas subject to contamination.

NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary.

1-1
July 1984

1 - Clamp, deadend

DISTRIBUTION

Copper 2 through 6 CWC 4A through 8A		ACSR (Aluminum Clamps)			
		4 / 0 & 3 / 0	2 / 0	1 / 0	2 & 4
-	ALCOA	302	302	302	302
-	American Connector Engineering	QDA-63	QDA-53	QDA-53	QDA-53
MD-52-N	Anderson/ Sq .D	PG57N	PG 57	PG-46N	PG-46N
-	Bethea Hardware	DA-20N	DA-15 -N	DA-15 -N	DA-15 -N
-	Continental	AQD-63	AQD-52	AQD-52	AQD-52
-	C & R	CR-20-90	CR-10-90	CR-10-90	CR-10-90
2111	Joslyn	BT5210	J25392	J25389	J25389
2111	Knox	5210			
-	Lapp	306120N	306118N	306118N	306118N
80500	Ohio Brass	89237	86534	86534	86534

p - Connectors, Distribution (Parallel Groove)

Applicable Specification, "REA Specification for Connectors," DT-8

	ACSR to ACSR To same size or smaller Bare Conductor				
	4/0 - 2/0	1/0	2	4	
Alcoa	190	396.6	490.0	490.0	
Anderson/Sq. D	LC-53A	LC-51C	LC-51A	LC-51A	
Bethea Hardware	APG-3	APG-2	APG-1	APG-1	
Blackburn	PAE 4141-9	PAE 2121-9	PAE 2121-9	PAE 2121-9	
Burndy	KVS28A	UCG25R	UC25R2R	UC25R2R	
Electrical Specialty Products, Inc.	PG-53A	PG-51C	PG-51C	PG-51C	
Fargo	GA-614	GA-620	GA-620	GA-620	
Joslyn	6053	6052	6052	6052	
Penn-Union	PCAA-20BF	PCAA-15BF	PCAA-10BF	PCAA-10BF	
Reliable	6053	6052	6052	6052	
Weaver	NICA12	NICA60	NICA2	NICA2	
	Over Armor Rods				
	3/0	2/0	1/0	2	4
Alcoa	200	R196	R196	R196	198
Anderson/Sq. D	LC-83A	LC-52C	LC-52C	LC-52C	LC-52C
Blackburn	-	-	PAA10	PAA10	PAA10
Burndy	-	-	UC32R	UC32R	UC32R
Electrical Specialty Products, Inc.	-	-	PG-52C	PG-52C	PG-52C
Fargo	GA-9843	GA-9842	GA-616	GA-616	GA-616
Joslyn	-	-	744AL	600AL	600AL
Penn-Union	-	-	ARC-12	ARC-11	ARC-14
Reliable	-	-	744AL	600AL	600AL
Weaver	-	-	NICR60	NICR60	NICR60

p - Connectors, Distribution (Parallel Groove)

Applicable Specification: "REA Specification for Connectors," DT-8

ACSR to Copper or Copperweld-Copper

ACSR Size (Bare Conductor)

	3/0	2/0	1/0	2	4
Alcoa	197	R193	R193	195	195
Anderson/Sq. D	LC-811A	LC-811A	LC-522A	LC-511A	LC-511A
Blackburn	PAC7	PAC7	PAC4	2CA	4CA
Fargo	GA-616C	GA-616C	GA-620C	GA-620C	GA-620C
Joslyn	600ALC	555ALC	438ALC	438ALC	438ALC
Reliable	600ALC	555ALC	438ALC	438ALC	438ALC
Weaver	-	-	-	2WCA	2WCA

ACSR Size (Over Armor Rods)

	3/0	2/0	1/0	2	4
Alcoa	201	R197	R197	R197	199
Anderson/Sq. D	LC-833	LC-833	LC-811A	LC-811A	LC-811
Blackburn	-	-	PAC7	PAC7	PAC7
Fargo	GA-9843C	GA-9842C	GA-616C	GA-616C	GA-616C
Joslyn	-	-	744ALC	600ALC	600ALC
Reliable	-	-	744ALC	600ALC	600ALC

p - Connector, Distribution

Applicable Specification: "REA Specification for Connectors," DT-8

Copper Type Conductors
Connections to same size or smaller

C'Weld Copper Copper	2A 0x7	2x3	4A	6A 4	8A 6
<u>Bare Conductor</u>					
Anderson/Sq. D	DG-1/0	DG-1	DG-2	DG-4	DG-6
(s) Blackburn	RT11	RT02	RT02	RT04	RT06
(s) Burndy	KS-25	KS-23	KS-23	KS-20	KS-17
(s) Dossert	DS-10-F	DS-6-F	DS-6-F	DS-3-F	DS-2-F
Fargo	GC-5020	GC-5002S	GC-5002	GC-5004	GC-5006
(s) Frankel	B-1/0	B-2	B-3	B-4	B-6
(s) Greaves	-	A-8	-	A-5	A-3
(s) ILSCO	IK-1/0	IK-2	IK-2	IK-4	IK-6
(s) Joslyn	-	IF	2F	4F	6F
(s) Kearney	118109	118109	118108	118104	118102
(s) Krueger & Hudepohl	UC58C-EV	-	-	-	-
(s) Penn-Union	S1/0	S2	S3	S4	S6
(s) Reliable	-	1F	2F	4F	6F
(s) Royal Elec. Mfg.	1739	1739	-	-	-
(s) Sherman	TS1/0	TS2ST	TS-2	TS-4	TS-6
(s) Weaver	10W	1W	2W	4W	6W

Over Armor Rods

Anderson/Sq. D	K-5	K-4	K-4	K-2	K-2
Blackburn	2B350	2B350	2B4/0	2B2/0	2B1/0
Burndy	KVS-31	KVS-31	KVS28	KVS26	KVS26
Fargo	GC-5035	GC-5035	GC-5040	GC-5020S	GC5020
ILSCO	IKB-350	IKB-350	IKB-4/0	-	-
(s) Kearney	118112	118112	118111	118110	118110
Penn-Union	VT-4	VT-3	VT-3	VT-2	VT-1
Weaver	350CX	350CX	4/0CX	2/0CX	1/0CX

(s)designates split bolt connectors

Long Connectors (Split Bolt)
Copper to Copper

	<u>2</u>	<u>4</u>	<u>6</u>
Anderson/Sq. D	C-2-L	C-4-L	C-6-L
Blackburn	2H3	4H3	6H3
Burndy	KS-22-3	KS-20-3	KS-17-3
Dossert	DS5-3	DS3-3	DS2-3
Greaves	A-9	A-6	A-4
Joslyn	-	4-F	6-F
Kearney	118107	118105	118103
Penn-Union	SEL-3	SEL-4	SEL-6
Reliable	-	4F	6F
Sherman	-	TSS-4	TSS-6
Weaver	2W3	4W3	6W3

p - Connectors, Service (Parallel Groove)

Applicable Specification, "REA Specification for Connectors,"DT-8

Aluminum-to-Aluminum

Solid or Stranded

	<u>No. 2</u>	<u>No. 4</u>
Alcoa	490.0	490.0
Anderson/Sq. D	LC-51A	LC-51A
Bethea Hardware	APG-1	APG-1
Blackburn	PAE 2121-9	PAE 2121-9
Burndy	UC25R2R	UC25R2R
Electrical Specialty Products, Inc.	PG-51C	PG-51C
Fargo	GA-620	GA-620
Joslyn	AL24KK	AL46KK
Penn-Union	PCAA-10BF	PCAA-10BF
Reliable	AL24KK	AL46KK
Weaver	NICA2	NICA2

p - Connectors, Guy Bond (Parallel Groove)

Applicable Specification, "REA Specification for Connectors,"DT-8

ACSR to Guy Strand

	<u>2/0</u>	<u>1/0</u>	<u>2 & 4</u>
Alcoa	396.6	396.6	490.0
Anderson/Sq. D	LC-52A-GP	LC-51C-GP	LC-51A-GP
Bethea Hardware	APG-3	APG-2	APG-2
Blackburn	PAE 2121-9	PAE 2121-9	PAE 2121-9
Burndy	UC 28R	UCG25R	UCG25R
Dossert	AC103-LW	AC101-LW	AC100-LW
Electrical Specialty Products, Inc	PG-52A-GP	PG-51C-GP	PG-51C-GP
Fargo	GA-616	GA-620	GA-620
Joslyn	744AL	555AL	438AL
Penn-Union	ALC-15	ALC-10	PCA-010
Reliable	744AL	555AL	438AL
Weaver	NICR60	NICA60	NICA60

Copper to Guy Strand

Anderson/Sq. D	LC-511A
Blackburn	2HPW (1/4")
	1/OHPW (3/8")
	PAC7
Burndy	UC8W26L
C & R	CRJC-1
Dossert	UDV 13-1-P
Fargo	GC-8040P
ILSCO	SK-3 (1/4")
	SK-1/0 (3/8")
Joslyn	J8300
Kearney	9968-1
Krueger & Hudepohl	UC58B-EV
Penn-Union	JC-1-AC
	(1/4", 3/8" guy strand)
	(1/0 strand copper max.)
Reliable	438ALC
Sherman	R-12
Weaver	K-1

p - Connectors, Compression

DISTRIBUTION

	<u>Aluminum to aluminum</u>	<u>Aluminum to copper</u>	<u>Copper to copper</u>	<u>Tap connections (Al to Al, Al to Cu)</u>
Anderson, Sq. D	AC Series	AC Series	VCUC	VCP
ITT Blackburn	Type WR	Type WR	Type CF	Type WR
Burndy	"Hycrimp"	"Hycrimp"	"Crimpit"	"Cabelok Crimpit"
Electrical Specialty	"Squeeze Conn" (Type S)	"Squeeze Conn" (Type S)	-	-
Homac	H Tap-OB&DB	H Tap-OB&DB	-	H Tap-OB&DB
Kearney	"Squeezon" (Aluminum)	"Squeezon" "Aluminum"	"Squeezon" (Copper)	"Squeezon" (Aluminum)
Penn-Union	"Press-On" (Aluminum)	"Press-On" (Aluminum)	"Press-On" (Copper)	"Penn-L-Tap"

u - Deadend for alumoweld guy strand

Strand Size	3#10(4M)	7#12(6M)	7#11(8M)	7#10(10M)	7X. 110"(11.5M)	7#9(12.5M)	7X. 121"(14M)	7#8(16M)	7X. 148"(20M)
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Formed Type
Alumoweld Guy Strand

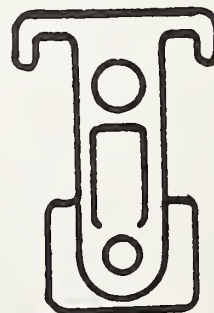
<u>Chance</u> <u>For standard guy</u>	6M-AWTLG	8M-AWTLG	10M-AWTLG	12.5M-AWTLG
	HG517-6M	HG519-8M	HG521-10M	HG523-12.5M
<u>Helical Line Prod.</u> <u>For standard guy</u>	AWDE-4108	AWDE-4110	AWDE-4113	AWDE-4116
	WGL-4110	WGL-4113	WGL-4116	WGL-4120
<u>Preformed Line Prod.</u> <u>For standard guy</u>	AWDE-4119	AWDE-4120	AWDE-4122	AWDE-4126
	HG525-16M	HG524-14M	HG525-16M	HG528-20M
<u>For wrapped guy</u>				

Automatic
Alumoweld Guy Strand

Fargo	GDE-300	GDE-301	GDE-301	GDE-302
	5200	5201	5201	5202
Reliable				

v - Guy Attachment
for 5/8" bolt

<u>Type:</u>	<u>Formed Strap</u>	<u>Angle Bolt Eye</u>	<u>Guy Hook</u>	<u>Pole Eye Plate</u>
<u>Maximum Working Load Rating</u>	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	37,800 N (8500 lbs.)
Anderson Elec./ Square D	-	-	-	GSP-05
Barron Bethea	-	-	GH-5*-	-
Bethea Metals	-	-	AGA56	-
Bethea Hardware	-	-	AG-5*	PE5-6A
Champ	-	-	CH58GH*	CH21PE
Chance	5004	0100	C203-0168*	-
Continental Electric	-	-	GAD-56-4*	PEP-66-45
Dixie	D5004	D0100	DD-9460,DD-9462*	-
Flagg (MIF)	-	-	P151A,P151X*	PX88
Joslyn	J25164	J6500	J6555,J6556	-
Kortick	K4035,K4047	K3140	-	-
McGraw-Edison	DG6H1	DG11E1	DG21H1 DG21H2	-
Power Line Hardware	-	-	HGA-58C*	PGA-548
Universal Electric	-	-	UGA-5	-
Util. Service	31030	5531	-	-



*This hook may also be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.

ae - Surge Arresters, Distribution
Metal Oxide

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
Surge arresters, distribution, metal oxide type, AZL 9, 10, 18 kV	1287 9/27/84	To obtain experience
<u>Ohio Brass</u>		
Surge arresters, distribution metal oxide type Dynavar, DV 9, 10, 18 kV	1283 7/12/84	To obtain experience

Note: Only arresters with top gaps and without ground lead disconnectors
are acceptable.

ae - Surge Arrester, Substation*

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u> Surge arrester, station class, metal oxide type, Tranquell, 2.7 kV thru 588 kV	1164 5/24/79	To obtain experience.
Surge arrester, intermediate class, metal oxide type, Tranquell, 3 kV thru 120 kV	1197 10/9/80	To obtain experience
<u>Joslyn</u> Surge Arrester, intermediate class, metal oxide type, Type ZI 3 thru 144 kV	1268 10/27/83	To obtain experience
Surge arrester, station class, metal oxide type, Type ZS, 3 kV thru 240 kV	1278 4/12/84	To obtain experience
<u>McGraw-Edison</u> Surge arrester, station class, metal oxide type, VariSTAR 3 kV thru 192 kV Type ATZ1A	1223 11/19/81	To obtain experience
Surge arrester.inter- mediate class,metal oxide type,VARISTAR 9 kV thru 120 kV, Type AZF	1287 9/27/84	To obtain experience
<u>Ohio Brass</u> Surge arrester, station class, metal oxide type Dynavar, 3 kV thru 357 kV	1175 11/2/79 1239 7/29/82	To obtain experience
Surge arrester, intermediate class, metal oxide type, Dynavar, 3 kV thru 120 kV	1242 9/9/82	To obtain experience
<u>Westinghouse</u> Surge arrester, station class, metal oxide type, SMX-30, 3 thru 240 kV	1256 4/6/83	To obtain experience

*For instructions concerning application at substations refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

af - Cutouts, Distribution, Open

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>
Chance	C	15, 27 kV
General Electric	9F 34D	15, 27 kV
Joslyn	Series 2	15, 27 kV
Kearney	MX (with or without loadbreak accessory)	15, 27 kV
McGraw-Edison	Sl	15, 27 kV
S & C Electric	XS	15, 27 kV
Southern States	Series 66	15, 27 kV
	Series 70	15 kV
Westinghouse	NCX	15, 27 kV
	LBU-11	15, 27 kV

NOTE: The buyer should specify the load rating, voltage rating, interrupting rating and required accessories.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

al - Staples, ground wire

Applicable Specification: ANSI C135.14, "Standards for
Staples with Rolled or Slash
Points."

Length x Spread (inches)	1-1/2 x 1/4	2 x 1/2	1-1/2 x 3/8	3 x 1-1/16
Diameter	9 gauge <u>Galv. Steel</u>	8 gauge <u>Galv. Steel</u>	8 gauge <u>Copper-Coated</u>	1/4 <u>Moulding</u>
Blackburn	-	-	CUS9	CUS22
Chance	C205-0247	C205-0216	9167	9161
Copperweld	-	-	CP52	-
Joslyn	J1672G	J157	J6652	J6497
Kortick	-	-	K247	K236
Larson	-	350453	750233	721312
Utilities Service 88		86	48	46

Barbed staples, ground wire

Length x Spread (inches)	1-1/2 x 3/8	2 x 5/8	1-1/2 x 3/8	3 x 1-1/16
Diameter	.131 <u>Galv. Steel</u>	.165 <u>Galv. Steel</u>	.140 <u>Copper-Coated</u>	7/32 <u>Galv. Steel</u>
Joslyn	J7656	J7672	J7682	J7664

Staples, alumoweld

Length x Spread (inches)	2 x 1/2	1-1/2 x 3/8	3 x 1-1/16
Diameter	<u>8 gauge</u>	<u>8 gauge</u>	<u>1/4 moulding</u>
Joslyn	-	J6652AL	J-7493AL

Clip, ground wire

Kearney	12326
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Conditional List
al
July 1984

al - Staples, Ground Wire

Clip, Ground Wire

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Fastex (ITW)</u> No. 780-2	1038 4/4/74	To obtain experience.

October 1984

ax - Cutout and Arrester, Combination

Nominal System Voltage	For 12.5Y/7.2 kV	For 13.2Y/7.6 kV	For 24.9Y/14.4 kV
Cutout Max. Voltage Rating	7.8 kV	15 kV	18 kV
Application	10 Trans.	30 Bank 30 Sect.	30 Bank 30 Sect.
Cutout Current Rating	50*	100	100
		50*	50*

Type

Manufacturer	Mounting	Catalog Numbers		
Chance	Crossarm	C71A-112PB	C71A-112PB	C71C-211PB
	Transformer	Series	Series	Series
General	Crossarm (L)	9F80	9F80	9F80
Electric	Transformer	9F78A	9F78A	9F78A
Joslyn(valve)	Crossarm	J9237-Q6	J9237-Q2/R	J9267-Q2
(valve)	Crossarm (L)	J9237-Q2/B	J9237-Q2/B/R	J9267-Q2/B
(valve)	Transformer	J9238-1Q	J9238-1Q	J9268-1Q
Kearney	Crossarm	KE3AB110E-110	KE4AB110E-110	KE7BD106E-110
	Transformer	294072	294073	294074
McGraw-Edison	Crossarm (L)	AFS301B	AFS301C	AFS300D
	Transformer	AFS800MO10	AFS800MO10	AFS800MO18
		Series	Series	Series

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

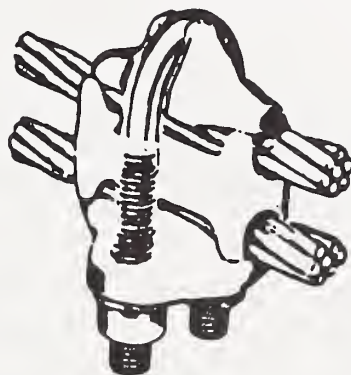
(L) Indicates loadbreak type is available.

bn
July 1984

bn - Clamp, loop deadend

For ACSR

	3/0	2/0	1/0	2	4
ALCOA	-	413	413	412	411
Anderson/ Sq . D	LC-74B	LC-71B	LC-70B 1	LC-70B	LC-70B
Bethea Hardware	ALD-7373-U	ALD-34-U	ALD-1313-U	ALD-1313-U	ALD-1313-U
Blackburn	DLC23	DLC2106	DLC2106	DLC2106	DLC2106
Burndy	-	-	UW 25R	UW 2R	UW 2R
C & R	-	-	CRLD-10	CRLD-10	CRLD-10
Fargo	GA-145	GA-145	GA-144	GA-144	GA-144
Weaver	-	-	WDE-10	WDE-2	WDE-2



bo
October 1984

bo - Shackle, anchor

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson/Sq. D	AS-25
Bethea Hardware	ASH-45
Chance	5801
Continental	AS-25-5-4
Dixie	D5801
Joslyn	J2742
Knox	3022
Kortick	K4481
Lapp	33852
Lindsey	3260
McGraw-Edison	DC7J1
Ohio Brass	13722
Powerline Hardware	AS-1
Utilities Service	4106

br
October 1984

br - End Link

<u>Manufacturer</u>	<u>Catalog Number</u>
Bethea Hardware	CL-5
Continental	L-5
Joslyn (Brewer-Titchener)	BT-3082-HT
Knox	3082-HT
Lapp	6415-HT
Lindsey	3403
Ohio Brass	79272

bs
July 1984

bs - Bolt, single upset

Applicable Specifications: "REA Specifications for Single and Double Upset Spool Bolts," D-5

Diameter, inches	5/8	5/8	5/8	5/8
Length, inches	7	8	9	10
Chance		7741	7741½	7742
Dixie	D7740	D7741	D7741½	D7742
Joslyn	-	J2342½	J2343½	J2344½
Kortick	K4929	K4950	K4930	K4951
McGraw-Edison*	DC2E11	DC2E3	DC2E4	DC2E5
Utilities Service	31052½	31053	31053A	31054



*Static proof designs available.

bv
July 1984

bv, Rods, armor

Aluminum or aluminum alloy rods for use on ACSR

Blackburn	Formed Type
Dulmison	Formed Type
Helical Line Products	Formed Type
Preformed Line Products	Formed Type
Southwire	Straight

Copperweld rods for copper or CWC conductor

Helical Line Products	Formed Type
Preformed Line Products	Formed Type

Alumoweld rods for aluminum clad steel (Alumoweld)
overhead ground wire

Helical Line Products	Formed Type
Preformed Line Products	Formed Type

Bronze rods (10 inch length) for jumper protection

Preformed Line Products	Formed Type
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bx
October 1984

bx - Splice, automatic

<u>Copper</u>	<u>Burndy</u>	<u>Fargo</u>	<u>Reliable</u>
6	ADS6S	GL-111	61
4	ADS4S	GL-112	41
2 x 3		GL-115	-
1/0 x 7	ADS1/0	GL-117	107
2/0 x 7	ADS2/0	GL-118	207
3/0 x 7	ADS3/0	GL-119	307
4/0 x 7	ADS4/0	GL-120	407
<u>CWC</u>			
8A		GL-112	
6A	ADS4	GL-113	47
4A	ADS2	GL-115	27
2A		GL-117	
<u>ACSR</u>			
	ADS-R Series*	GL-400 Series*	7650 Series*
<u>Aluminum Alloy</u> <u>(6201 and 5005)</u>			
		GL-100A Series	AL55 Series
		GL-1000A Series	

*For use on distribution only.

bz - Switch, oil

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
Capacitor oil switch	940	To obtain experience.
Type TSC, 38 kV max.	4/2/70	
100 ampere capacitor switch		
300 ampere load switch		
 Oil switch with	 1046	 1. To obtain experience.
125 kV BIL accessory	7/25/74	
Type NR, 15 kV, single-		2. For use on single-
phase, remote electric		phase taps of
control, 200 amp. at		14.4/24/9 kV multi-
75 to 100 percent power		grounded wye systems.
factor		
 <u>South Bend Controls, Inc.</u>	 1284	 To obtain experience
Capacitor, oil switch	8/2/84	
Type CSD-95, 95 kV BIL		
15 kV Max. 200amp.		

cg - Switch, air, three-pole, group-operated
NEMA standard switches for station and line structures

cg-1
July 1984

Manufacturer	Acceptable Mounting on Structures	Tilting Ins.		Vertical Break		Side Break		Center Break		Double Break	
		Type	kV	Type	kV	Type	kV	Type	kV	Type	kV
Brown Boveri Elec. (ITE)	Horizontal			TTR6	15-34.5						
A. B. Chance	Horizontal					D6(L)15-34.5					
	Phase over					D6(L)15-34.5					
	Vertical					D6(L)15-34.5					
Johnson	Horizontal			VIP	15-230	LS	15-69	M	15-230		
Joslyn (Hi-Voltage)	Horizontal			RF-2(VL)	15-230	RB-1(VL)	15-25				
	Horizontal					RB-1*	15-115				
Kearney	Horizontal	NE-2	15-34.5	AR 60-P	15-69						
MEMCO	Horizontal	AgF	15-69	EA	15-345			EE	69-230		
	Horizontal	AgC	15-69								
G & W Electric Company	Horizontal			MK-40	15-69	PMB-40A	15-69	LPC	69-230		
Powerdyne (Kearney)	Horizontal									V2-V4	15-230
	Phase over									V2	15-23
ITT Royal Switchgear	Phase over					RG-63(L)	15-69				
	Horizontal					RSL-L(L)	15-69				

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

* These switches may be purchased with reduced voltage vacuum interrupters and may be applied for loop sectionalizing duty when peak recovery voltage does not exceed 25 kV.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group-operated
NEMA standard switches for station and line structures

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Tilting Ins. Type</u>	<u>kV</u>	<u>Vertical Break Type</u>	<u>kV</u>	<u>Side Break Type</u>	<u>kV</u>	<u>Center Break Type</u>	<u>kV</u>	<u>Double Break Type</u>	<u>kV</u>
S & C	Horizontal			Alduti(L)15-34.5		Alduti(L)15-25				Alduti(L)34.5-46	
	Phase over Phase			Alduti(L)15-25		Alduti(L)15-25				Alduti(L)34.5-46	
	Vertical			Alduti(L)*15-34.5		Alduti(L)15-25				Alduti(L)*34.5-46	
SEECO	Phase over Phase					GOABS(VL)15-69					
Siemens-Allis	Horizontal			TA(VL) 15-69		SSB-T 15-69		CCB-115-230			
				AVB(VL)**115-345				CBL-2 115-230			
Southern States	Horizontal			EV 15-230		57K 15-69					
Turner	Phase over Phase					(1D, 2D, 3D)(VL) 15-161					
	Horizontal					1D(VL) 15-161					
	Horizontal			THI(VL) 15-161							
USCO	Horizontal			AGT(VL)**15-230		GSH-4(VL)15-138		AGCH** 15-345			
	Horizontal							AGCH-V**34.5-230			
	Phase over Phase					GSH-4(VL)15-138		GCH 15-23			

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

* These switches, except 34.5 kV Alduti vertical break, are available and accepted in combination with the S & C Type SMD substation fuse cutouts listed on page af-3.

** Also available in bronze in some ratings.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three pole, group operated

(FOR USE ON STEEL SUBSTATION STRUCTURES)

<u>Manufacturer</u>	<u>Mounting</u>	<u>Vertical</u>		<u>Side Break</u>	
		<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>
Chance	Vertical			D7(L)	15-27
	Horizontal			D7(L)	15-27
S & C	Phase-over-Phase	Alduti(L)	34.5 (200 kV BIL)	Alduti(L)	34.5 (200 kV BIL)
	Vertical		Alduti (L) 34.5 (200 kV BIL)		

(L) Means gas of solid material full-load interrupters are accepted and available.

cg - Switch, air, three-pole, group operated

(not Suitable for Substation Use)

<u>Manufacturer</u>	<u>Acceptable Mounting</u>	<u>Vertical Break</u>		<u>Side Break</u>		<u>Center Break</u>	
		Type	kV	Type	kV	Type	kV
Chance	Horizontal			D6(L)	15-34.5		
	Phase over Phase			D6(L)	15-34.5		
	Vertical			D7(L)	15-34.5		
K - P - F	Horizontal	SV-202	23	A202-A208	15-110		
	Phase over Phase			A202	15-23		
	Phase over Phase			W202	15-23		
	Phase over Phase			MD202	15-23		
Powerdyne (Kearney)	Horizontal			S	15-23	V2	15-23
	Phase over Phase			S	15-23	V2	15-23

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, three-pole, group-operated
(Factory Preassembled)

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Vertical Break Type kV</u>	<u>Side Break Type kV</u>
Chance	Horizontal		D7(L)15-27
	Phase over		D7(L)15-27
	phase (A)		
	Vertical (A)		D7(L)15-27
	Horizontal (B)		D7(L)34.5 (200 kV BIL)#
	Phase over		D7(L)34.5
	phase (B)		(200 kV BIL)#
	Vertical		
S & C	Horizontal (A)		Alduti(L)15-25
	Phase over	Alduti(L)34.5	Alduti(L)34.5
	phase (B)	(200 kV BIL)#	(200 kV BIL)#
	Vertical (B)	Alduti(L)34.5 (200 kV BIL)#	

(L) Means gas of solid material full-load interrupters are accepted and available.

Accepted for transmission use only, provided the steel crossarm base is grounded with an adequate grounding connector.

(A) Not suitable for station and line structures.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods, except as otherwise noted.

cg - Switch, air, three-pole, group-operated

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Southern States</u> "Pole-Pak" 15-23 kV	800 8/20/64	To obtain experience.
Type ES; 15, 23 and 34.5 kV (horizontal upright models only)	897 7/11/68	1. To obtain experience. 2. For 15 kV and 23 kV distribution lines: insulated interphase and control rod spacers required. See REA Drawings M3-15 and VM3-16. 3. NEMA insulators and steel interphase base required for trans- mission line structure as in TM-3. 4. Acceptable on steel substations 15 through 34.5 kV with NEMA insulators and uninsulated inter- phase rods.
Type 57L sidebreak, 115-161 kV, 600 and 1200 amp., horizontal upright	1067 6/12/75	To obtain experience.
<u>G & W Electric Company</u> Type MK-40A 15 kV thru 230 kV (horizontal upright mounting)	912 2/20/69	1. To obtain experience. 2. Insulated interphase and control rods required on 15 kV and 23 kV models used on wood structures. 3. Steel interphase base required when mounted as in REA Drawing TM-3.

ci
October 1984

ci - Clevis, Thimble, Side-Opening

Numbers listed will accommodate: No. 6 thru 2/0 Copper
No. 8A thru 2A Copperweld-Copper
No. 4 thru 3/0 ACSR

Joslyn (Brewer Titchener)	2401
Knox	2401
McGraw-Edison	DM5C1
Ohio Brass	82825

cj - Pole Ground Wire

Soft annealed iron, BB Grade, Class C galvanizing
(For pole protection only)

<u>Manufacturer</u>	<u>Size</u> <u>1.15 Ohms/1000 ft., max.</u>
Bethlehem Steel	3-wire, 5/16 inch
Indiana Steel and Wire	3-wire, 5/16 inch
Southwire	3-wire, 5/16 inch
U. S. Steel	3-wire, 5/16 inch

Copper, soft annealed solid
ASTM Specification B3

Manufacturer

(See page av-2)

Aluminum (for above ground use only)
Three-quarter hard-drawn EC grade

Manufacturer

(See page av-1)

Aluminum Alloy (for above ground use only)

<u>Manufacturer</u>	<u>Type</u>
ALCAN	6201
ALCOA	6201
American Electrical	6201
Kaiser	6201
Reynolds	5005
Southwire	6201, 5005

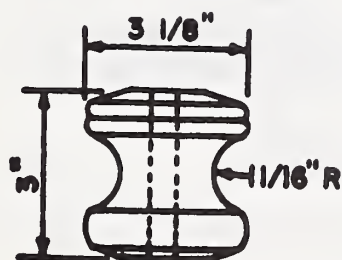
Copper-Clad Steel, Annealed 40 percent Conductivity

<u>Manufacturer</u>	<u>Size</u>
Copperweld*	No. 6

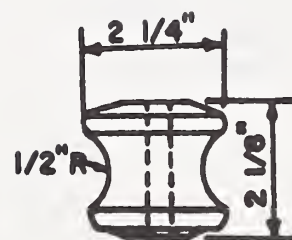
*Not for use on distribution when neutral is larger than #1/0 ACSR.

cm - Insulator, Spool

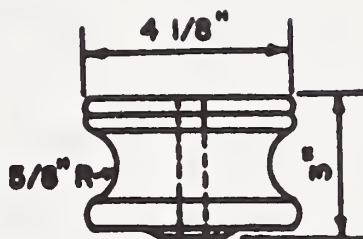
Type:	<u>Secondary (Wet Process)</u>		<u>Service</u>	
			<u>Wet Process</u>	<u>Dry Process</u>
Groove Diameter:	<u>1-3/4"</u>	<u>3"</u>	<u>1-3/8"</u>	<u>1-3/8"</u>
Chance	C909-1032	C909-1034	C909-1031	0606
Hughes	2102	-	-	-
Joslyn	J151	J0101	J150	J100
Kortick	K516	K522	K513	K514
McGraw-Edison	DE4S3	DE5S1	DE2S2	DE2S1
Porcelain Products (Knox)	5101	5119	5107	5207
Universal	1082	-	-	-
Utilities Service	205	31221	208	207
Victor Insulators, Inc.	2012	2026	2011	-



1-3/4" Groove Diameter



1-3/8" Groove Diameter



3" Groove Diameter

cp
October 1984

cp - Deadend, Compression Type

ACSR

<u>Conductor Size</u>	<u>Alcoa</u>	<u>Anderson/Sq. D</u>
1/0	Order by	VCD-50R
2/0	Conductor	thru
3/0	Size and	VCD-61R
4/0	<u>Stranding</u>	"
266.8 kcmil 26/7	2-piece	VCD-831-1-RM
336.4 kcmil 26/7	alloy	VCD-831-1-RM
477 kcmil 26/7	compression	VCD-832-2-RM
556.5 kcmil 26/7	Type VES or	VCD-833-3-RM
795 kcmil 26/7	HES	VCD-835-4RM
954 kcmil 54/7	"	VCD-835-4RM

<u>Conductor Size</u>	<u>Burndy</u>	<u>Fargo</u>	<u>Kearney</u>	<u>Homac</u>
1/0	Type Y-W	SEDA-8129	104000	Order by
2/0	"	SEDA-7729	thru	Conductor
3/0	"	SEDA-7829	104000-03	Size and
4/0	"	SEDA-7929	"	<u>Stranding</u>
266.8 kcmil 26/7	"	Uni-Grip	104000-05	"
336.4 kcmil 26/7	Type YTW	one die	thru	"
477 kcmil 26/7	"	system	104000-14	"
556.5 kcmil 26/7	"	Order by	"	"
795 kcmil 26/7	"	conductor size		
954 kcmil 54/7	"	and stranding		

ACSR

Adjustable

Fargo
Homac

Order by conductor size and stranding

Aluminum Alloy
(6201 and 5005)
4 thru 4/0

Conductor Size:

Anderson/Sq. D

Type VOD, Order by conductor size.

Copper

Conductor Size:

2 x 3

4

6

National Tel. Supply

71-258/3X

71-204-P

71-162-J

Copperweld-Copper

Conductor Size:

6A

8A

National Tel. Supply

71-6A-P

71-8A-P

cx
July 1984

cx - Splice, oval tube

<u>Copper</u>				
<u>Conductor Size:</u>	<u>0 x 7</u>	<u>2 x 3</u>	<u>4</u>	<u>6</u>
National Tel. Supply	464	463	459	457

<u>Copperweld-Copper</u>		
<u>Conductor Size:</u>	<u>6A</u>	<u>8A</u>
National Tel. Supply	460	459



cy - Splice, Compression
ACSR

Conductor Size	Alcoa	Anderson/ Sq. D	Burndy
4 6/1	2-piece	VC-36R	"Unisplice"
4 7/1	Order	VC-36R	(1-piece)
2 6/1	by	VC-36R	or Y-S
2 7/1	Conductor	VC-36R	(2-piece)
1/0	Size	VC-50R	Order by
2/0	and	VC-50R	Conductor
3/0	Stranding	VC-61R	Size and
4/0	"	VC-61R	Stranding
266.8 kcmil 26/7	2-piece	VC-831-1-RM	2-pc.
336.4 kcmil 26/7	Compression	VC-831-1-RM	Type YTS
477 kcmil 26/7	Alloy Type	VC-832-2-RM	"
556.6 kcmil 26/7	CJ	VC-833-3-RM	"
795 kcmil 26/7		VC-835-4RM	"
954 kcmil 54/7		VC-835-4RM	"

Conductor Size	Fargo	ITT Blackburn	Kearney
			2 pc. 1 pc.
4 6/1		Type RC	OH4-61-71AS
4 7/1		1-piece	OH4-61-71AS
2 6/1		Order	OH2-61-71AS
2 7/1		by	OH2-61-71AS
1/0	TJA-8129	Conductor	OH1/0-61A
2/0	TJA-7729	Size	OHR2/0-61A
3/0	TJA-7829	and	OHR3/0-61A
4/0	TJA-7929	Stranding	HR4/0-61A
266.8 kcmil 26/7	Uni-grip	#4 to 4/0	HR-266-267A
336.4 kcmil 26/7	one die		HR336-267A
477 kcmil 26/7	system		HR-477-267A
556.5 kcmil 26/7	Order by		HR-556-267A
795 kcmil 26.7	conductor size		
954 kcmil 54/7	and stranding		

Conductor Size	Nat. Tel. Supply	Homac	ESP
4 6/1	"Nicopress"	"Tension	FTR-4
4 7/1	(1-pc. or 2-pc.)	splicer"	FTR-4
2 6/1	Order by Conduc-	(1-piece or	FTR-2
2 7/1	tor Size and	2-piece	FTR-2.5
1/0	Stranding	Order by	FTR-1/0
2/0	2-pc.	Conductor	FTR-2/0.5
3/0	"	Size and	FTR-3/0
4/0	"	Stranding	FTR-4/0
266.8 kcmil 26/7	"	2-pc.	
336.4 kcmil 26/7	"	"	
477 kcmil 26/7	"	"	
556.5 kcmil 26/7	"	"	
795 kcmil 26/7			
954 kcmil 54/7			

du - Link, Extension

DISTRIBUTION

Manufacturer

Catalog Number

Bethea Hardware
Chance
Continental
Flagg (MIF)
McGraw-Edison
Utilities Service

LCE-14
C207-0112
CEL-14
PA319
DC33B6
495

TRANSMISSION
(25,000 lbs. min. strength)

Joslyn

J26082

Guy Extension Link
(For "H" Structure)

Manufacturer

One Guy Attachment

Two Guy Attachment

Joslyn

J22421

J22523

NOTE: The distribution extension links may be substituted for anchor shackle (Item bo), eye bolt (Item o) and eye nut (Item aa) for both small and large conductor drawings shown in REA Form 803 and REA Bulletin 50-3 at the option of the owner.

Conditional List
du(1)
July 1984

du - Connecting Links

Strength Rating: 25,000 lbs. ultimate loading

<u>Manufacturer</u>	<u>Link to guy</u>	<u>Size</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Hughes	3154 Link to <u>Insulators</u>	3/8" x 2" x 9-1/2"	1172 9/20/79	To obtain experience in conjunction
Hughes	3176	3/8" x 3" x 9-1/2"	1172 9/20/79	with pole bands (Item fv(1))

ea - Insulator and Stud, post type

DISTRIBUTION

System voltage, kV	7.2/12.5*	7.2/12.5*	14.4/24.9
Leakage, inches	7-1/2	10	15
Flashover, dry, kV	65	70	95
Flashover, wet, kV	<u>40</u>	<u>50</u>	<u>65</u>

Chance

(Malleable iron base, also
available with aluminum
base)

7" Stud	C903-1710-04	C903-1711-04	C903-1712-04
1-3/4" Stud	C903-1710-05	C903-1711-05	C903-1712-05

Lapp

7" Stud	4415P	4420P	4427P
1-3/4" Stud	4315P	4320P	4327P

Ohio Brass

7" Stud		43400-7040	43401-7040
1-3/4" Stud		43400-7010	43401-7010

TRANSMISSION

System voltage, kV	22	34.5	46
ANSI Class	57-2	57-3	57-4
Flashover, dry, kV	110	125	150
Flashover, wet, kV	<u>85</u>	<u>100</u>	<u>125</u>

Chance

7" Stud	C903-1002-04	C903-1003-04	
1-3/4" Stud	C903-1002-05	C903-1003-05	

Lapp

7" Stud	9435	9445	9455
1-3/4" Stud	9335	9345	9355

Ohio Brass

7" Stud	37620-7040	41640-7040	41650-7040
1-3/4" Stud	37620-7010	41640-7010	41650-7010

NOTE: Post Insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

*The transverse loading on these insulators shall not exceed the lower of 40 percent of the insulator's ultimate strength and the maximum transverse loading given for the structure in REA Bulletin 50-3.

ea-2
October 1984

ea - Insulators, horizontal post type

<u>Manufacturer</u>	<u>34.5 kV</u>	<u>69 kV</u>	<u>115 kV</u>
Lapp	F-4745	F-4788	F-70147
Ohio Brass	43740	43790	47043
Victor Insulators, Inc.	62356	-	-

ea - Insulator, post type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Victor Insulators, Inc.</u>		
2120 (12.5/7.2 kV)	932	To obtain experience.
2127 (24.9/14.4 kV)	12/4/69	
62055 (22 kV)	1189	
62056 (34.5 kV)	6/19/80	

eb
July 1984

eb - Bracket, Pole Top
For Post Type Insulators

DISTRIBUTION

<u>Barron Bethea</u> (7.2 or 14.4 kV)	1B-4
<u>Bethea Hardware</u> (7.2 or 14.4 kV)	BPT-58F
<u>Continental</u> (7.2 or 14.4 kV)	PTB-55-8
<u>Flagg (MIF)</u> (7.2 or 14.4 kV)	P526
<u>Joslyn</u> (7.2 or 14.4 kV)	J23333
<u>Lapp (Line Ware)</u> (7.2 or 14.4 kV)	304043
<u>McGraw-Edison</u> (7.2 or 14.4 kV)	DC62B1
<u>Ohio Brass</u> (7.2 or 14.4 kV) (7.2 kV)	84324 89725
<u>Universal Electric</u> (7.2 or 14.4 kV)	PT-8R

TRANSMISSION

Barron Bethea	1B-4
Bethea Hardware	BPT-58HF
Continental	PTB-66H
Flagg (MIF)	P532
Lapp (Line Ware)	304044
McGraw-Edison	DP29A1
Ohio Brass	84324

NOTE: Pole top bracket (Item eb) and post insulator (Item ea) may be substituted for pole top pin (Item b) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

eh
October 1984

eh - Hook, ball

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson Elec./Square D	HB-30
Bethea Hardware	BH-5
Continental Electric Company	BH-30-5
Joslyn (Brewer-Titchener)	3001-HT
Knox	3001
Lapp	7055
Lindsey	3310
Ohio Brass	78420
Power Line Hardware	BH-30

ej - Clamps, deadend with socket eye

ACSR

<u>AWG</u>	<u>2/0 to 4/0</u>	<u>266.8</u>	<u>366.4</u>	<u>477</u>	<u>556.5</u>	<u>795</u>	<u>954</u>
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Iron or Steel Clamps (require armor tape or liner)

Joslyn (Brewer-Titchener)
Knox
Ohio Brass

5001
5001
80440

5002
5002-B
80445

5003
5003
80450

Aluminum Alloy Clamps (do not require armor tape or liner)

Anderson/Square D
Betha Hardware
C & R

SD-57-S
ADE-21-S
CR-10-60S

5200
5200
305757S
86536

SD-70-S
ADE-22-S
CR-20-60S

5201
5201
305758S
86540

SD-86-S
ADE-23-S
CR-20-60S

5202
5202
305759S
86546

SD-86-S
ADE-24-S
ADE-24-S

5203
5203
305760S
86546

SD-98S
ADE-2526-S
ADE-2526-S

NOTE: When used with clevis-type insulators for large conductors on distribution lines, order clamp with clevis eye.

ek
July 1984

ek - Locknuts

For Bolt Diam., in.:	3/8	1/2	5/8	3/4	7/8
	<u>MF Type</u>				
Chance	3510	3511	3512	3513	3514
Dixie	D3510	D3511	D3512	D3513	--
Hughes	MF30	MF50	MF60	MF70	--
Joslyn	J8581	J8582	J8583	J8584	J8584-1/2
Kortick	K1065	K1066	K1067	K1068	--
McGraw-Edison	DF 3N1	DF 3N2	DF 3N4	DF 3N6	DF 3N8
Power Line Hardware	SLN38	SLN50	SLN58	SLN34	SLN78
Utilities Service	4920	4921	4922	4923	4924

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Bethea Hardware		
Two-phase pin bracket 6742-36P	1285 8/16/84	1. To obtain experience
Standoff insulator bracket 6745-13P		2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator bracket 6745-18P		3. Not to be used where conductor galloping may be expected.
		4. Not to be used in con- taminated atmospheres.
<u>Flagg (MIF)</u>		
Two phase angle bracket 7561-336E	1201 12/4/80	Same as above.
Two phase pin bracket 7561-436		
Standoff insulator 7561-012		
Standoff insulator 7561-018		
Suspension bracket 7561-818		
Standoff bracket 7561-218		
Deadend arm 7554-636-4E	1272 1/5/84	

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Two-phase pin bracket C653-0987	1049 9/5/74	1. To obtain experience.
Standoff insulator C653-0988		2. For use only in scenic areas and locations where right-of-way is limited.
Deadend arm C653-1024	1141 6/15/78	3. Not to be used where conductor galloping may be expected.
		4. Not to be used in con- taminated atmospheres.
<u>Continental</u>		
Two-phase pin bracket GPB 2-568M-44--V-1.375	1181 2/14/80	Same as above.
Two-phase pin bracket GPB 2-558H-48-V-1.375	1272	
Standoff insulator GPB -58M-19-V-1.375	1/5/84	
Standoff insulator GPB -58H-20-V-1.375		
Standoff bracket GIACB-58M-18		
Deadend arm GDEA-58-3.0-48-2E		
<u>Shakespeare</u>		
Deadend arm, 540-48	1063(4/17/75)	Same as above.
Standoff insulator, 880-20	1081	
Two-phase pin bracket, 883-48	1/8/76	
Standoff insulator, 870-19	1089	
Two-phase pin bracket, 862-44	4/29/76	
Standoff bracket, 892-18		

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Bethea Hardware</u>		
Standoff insulator bracket 6882-18P	1285 8/16/84	1. To obtain experience 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected. 4. Not to be used in con- taminated atmospheres.
<u>Flagg (MIF)</u>		
Standoff insulator 7581-120X	1201 12/4/80	Same as above.
Standoff insulator 7561-118X		
Two-phase pin bracket 7561-448X	1272 1/5/84	
Standoff bracket 7561-218		
Deadend arm 7554-648-4E		

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

WOOD ARM ASSEMBLIES

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Aluma-Form</u>		
Arm assembly, 7.2/12.5 kV XA-3812	1038 4/4/74	1. To obtain experience.
Arm assembly, 14.4/24.9 kV XA-4214		2. For use only in scenic areas and locations where right-of-way is limited.
		3. Not to be used where conductor galloping may be expected.
		4. Not to be used as deadend structures.
<u>Hughes Brothers</u>		
Deadend arm, 2890-J complete with braces and attaching hardware, fittings and bolts	1065 5/15/75	1. To obtain experience.
		2. For use only in scenic areas and locations where right-of-way is limited.
		3. Not to be used where conductor galloping may be expected.

fm - Bracket, Arrester and Pothead Extension

For Distribution Arrester and Cutout - Pole Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		1HCA-18 Series	R3CA-48
Anderson/ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL	
Bethea Hardware	12.5/7.2 kV 24.9/14.4 kV	VIB3-18-R1-GC-C VIB3-18-GC	
Chance		C653-1038	C653-1056
Continental	12.5/7.2 kV 24.9/14.4 kV	IACB-12-5LGE IACB-18-5LGE	GPB-3-0-568M-3012-CAT 12 GPB-3-0-568M-4017-CAT 12
Dixie	12.5/7.2 kV 24.9/14.4 kV	D-1580 D-1583	D27211-G
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613H PA619H	
McGraw-Edison		DC34B3	
Power Line Hardware	12.5/7.2 kV	CA-12-3GL	
Shakespeare		892-18	670-40
Universal Electric		SAB-3-18-GC	

For two distribution arresters in parellel or one
arrester and cutout - crossarm mounted

<u>Manufacturer</u>	<u>Catalog No.</u>
McGraw-Edison	DM23B2

For Intermediate Arrester Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		WBMA-1	R3CSA-48
Bethea Hardware	12.5/7.2 kV	VIB3-18-R1-GC-C	

fn
October 1984

fn - Bracket, Cutout Extension

<u>Manufacturer</u>		<u>Catalog Number</u>
Aluma-Form		1HCA-C-18
Anderson Elec./	12.5/7.2 kV	COB-E-120-TGL
Square D	24.9/14.4 kV	COB-E-180-TGL
Bethea Hardware	12.5/7.2 kV	VIB3-12F-GC
	24.9/14.4 kV	VIB3-18-GC
Chance		C653-1038
Continental	12.5/7.2 kV	IACB-12-5-LGE
	24.9/14.4 kV	IACB-18-5-LGE
Flagg (MIF)	12.5/7.2 kV	PA613H
	24.9/14.4 kV	PA619H
McGraw-Edison		DC34B1
Power Line		
Hardware	12.5/7.2 kV	CA-12-3GL
Shakespeare		892-18
Universal Electric		SAB-3-18-GC

gb - Meter sockets

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Duncan</u> Meter mounting device 400 ampere, Type K-4# for use with Type MS-K, 1Ø Duncan meters	947 7/9/70 1136 4/6/78	1. To obtain experience. 2. To be used only where Class 400 meters are permitted by local regulatory bodies.
Socket type HQ-4S 4 jaws rated for Class 300 service	1136 4/6/78	1. To obtain experience. 2. To be used only where Class 300 meters are permitted by local regulatory bodies.
<u>Durham</u> M-400 ampere 4 or 5 jaws for use with Class 10 meters	1086 3/18/76	1. To obtain experience.
<u>Milbank</u> Type S1079-F, 4 jaws rated for Class 320 service	1103 12/2/76	1. To obtain experience.

#Available with UL label.

gj
October 1984

gj - Crossarm Assemblies and Arm Spacers

Distribution

Wood crossarm assembly complete with braces
and attaching hardware, fittings and bolts

Crossarm Assembly

<u>Manufacturer</u>	<u>Crossarm Size</u> (inches)	<u>Catalog No.</u>
Brooks Lumber Company	3-3/4 x 4-3/4 x 8'-0"	3100 F
	3-3/4 x 5-3/4 x 8'-0"	3100 B
	3-3/4 x 7-3/4 x 8'-0"	3100 I
	3-3/4 x 7-3/4 x 10'-0"	3100 J
Hughes Brothers	3-1/2 x 4-1/2 x 8'-0"	2890A
	3-3/4 x 5-3/4 x 8'-0"	2890B
	3-3/4 x 7-3/4 x 8'-0"	2892-A
	3-3/4 x 7-3/4 x 10'-0"	2892-B

Twin Arm Spacer*

To be used with standard hardware, 8' x 3-5/8" x 4-5/8" crossarm and 28" wood braces

Flagg PX240

Power Line Hardware CAS-455

*Restricted to applications where the conductor's maximum design tension is less than 1250 lbs. and to conductor sizes 1/0 ACSR and below.

zz - Poles

Applicable preservatives: Creosote, pentachlorophenol-petroleum and waterborne salts (ACA and CCA)

(Firms listed on pages zz-1 through zz-7 are also qualified to treat crossarms. Crossarms should be fabricated at one of the plants listed on page g-1 or g-2.)

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Alabama Wood Treating Corp.	-	Mobile, Ala.
American Creosote Works, Inc.	-	Jackson, Tenn. Louisville, Miss. Pensacola, Fla.
American Crossarm & Conduit Co.	-	Chehalis, Wash.
American Wood	-	Richton, Miss.
Arkwood	-	Omaha, Arkansas
Atlantic Wood Industries, Inc.	-	Portsmouth, Va. Savannah, Ga. Vidalia, Ga. Fruitland, Md.
Baldwin Pole & Piling Co.	-	Bay Minette, Ala.
J. H. Baxter & Co.	Eugene, Ore.	Eugene, Ore. Long Beach, Calif. The Dalles, Ore. Arlington, Wash. Weed, Calif. Laramie, Wyo.
Benton Creosoting Co. (Kennedy Saw Mills)	-	Benton, La.
Broderick Wood Products Co.	-	Denver, Colo.
Brown Wood Products, Co.	-	Brownville, Ala. Louisville, Ky.
Cahaba Pressure Treated Forest Products, Inc	-	Brierfield, Al.
Carolina Creosoting Corporation	-	Leland, N. C.
Cascade Pole Co.	-	Tacoma, Wash. Olympia, Wash.

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Cowboy Timber Treating, Inc.	-	Manderson, Wyo.
Colfax Creosoting Co.	-	Pineville, La.
Conroe Creosoting Co.	-	Conroe, Texas
Crown Zellerbach Corp.	-	Gulfport, Miss. Mobile, Ala. Urania, La. Sallisaw, Okla.
Dant & Russell, Inc.	-	North Plains, Ore.
Davis Timber Company, Inc.		Hattiesburg, Miss.
Durable Wood Preservers, Inc.	-	Charlotte, N. C.
Eppinger and Russell	-	Chesapeake, Va.
Escambia Treating Co.	-	Brunswick, Ga. Pensacola, Fla. Camilla, Ga. Brookhaven, Miss.
Fernwood Industries	-	Fernwood, Miss.
Fordyce Wood Treaters, Inc.		Fordyce, Ark.
Garland Creosoting Company	-	Longview, Texas
General Wood Preserving Co.	-	Leland, N. C.
Hart Creosoting Company	-	Jasper, Texas
Hoosier Treating Company	-	Gosport, Ind.
Huxford Pole & Timber Co., Inc.	-	Huxford, Ala.

U ae - Arresters, Surge
(For underground system pole risers or pad-mounted equipment)

(Shielded for Underground System Pad-Mounted Equipment)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
Metal oxide, AMOV1 U.D. 10, 18 kV	1223 11/19/81	To obtain experience.
<u>RTE</u>		
Metal Oxide Elbow Arrester M.O.V.E. 9, 18 kV	1185 4/24/81	To obtain experience.

(For Underground System Pole Risers)

General Electric

Metal Oxide, Tranquell U.D. 9, 10, 18	1185 4/24/80	To obtain experience.
Metal Oxide, Tranquell Intermediate Class 9, 10, 18 kV	1197 10/9/80 1276 3/15/84	To obtain experience.

Joslyn

Metal Oxide, Type ZJ U.D. 9, 10, 18 kV	1266 9/22/83	To obtain experience.
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Metal Oxide, Type ZR Intermediate Class* 9, 10, 18 kV	1266 9/22/83	To obtain experience.
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McGraw-Edison

Metal Oxide, AVZ 1B 9/10, 18 kV	1223 11/9/81	To obtain experience.
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Metal Oxide AZR Intermediate class 10, 18 kV	1287 9/27/84	To obtain experience.
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Ohio Brass

Metal Oxide, DynaVar VR UD 9, 10, 18 kV	1236 6/10/82	To obtain experience.
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Metal Oxide, DynaVar Intermediate Class 9, 10, 18 kV		
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*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

U an-1.1
July 1984

U an - Transformers, distribution
pad-mounted, dead-front

(For underground application)

Applicable Specifications: "REA Specifications for Pad-Mounted
Transformers," U-5.

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three-Phase</u>
Central Moloney (2,4)	"REA-LP" 25-167 kVA	
Dowzer (3,4)	"METRI-PAD" 25-167 kVA	"PM3W-R" 75-500 kVA
ERMCO (1) (4,6) (2,4)	"Trimline" 10-50 kVA "Low-Profile" 10-50 kVA "Low-Profile" 75 kVA	
General Electric (2,4)	"Mini-Pad III - REA" 10-167 kVA	"Compad II - REA" 75-2500 kVA
Howard (2,4)	"Hi Pad REA" 10-167 kVA	"Hi Pad 3 REA" 45-2500 kVA
Kuhlman (2,4)	"Lo-Pak ALR" 25-167 kVA	
Mc Graw-Edison (2,4)	Series 20/20 REA 25-167 kVA	"REA Pad-Mount" 75-2500 kVA
NECO/Hammond (2)	HMM-R, 10-50 kVA SP-R, 75-167 kVA	TP-R, 45-1000 kVA
Pauwels-Chance (2)	"Turf Hugger-R" 10-100-kVA	"Turf Hugger-R" 45-500 kVA
H. K. Porter (2,4) (Delta-Star)	"Low Profile U 5-R" 25-167 kVA	"Porter U5-R3" 225-2500 kVA
RTE (2,4)	"REA Shrubline" 15-167 kVA	"REA Terra-Tran" 45-2500 kVA
United (Ky, AEC) (2,4)	"Pad-Mount" 15-75 kVA	

- (1) 7.2/12.5 and 7.6/13.2 kV
- (2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV
- (3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)
- (4) Dual voltage - same as for 14.4/24.9 kV, single phase
- (5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only
- (6) 14.4/24.9 kV

U gu - Pedestal, Power

Refer to Construction Drawings UK5 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Inside Dimensions Inches</u>	<u>Height Inches</u>	<u>Catalog No.</u>
Coil Sales (Charles Industries)	8.25 Dia	31-1/2	CPLP-8
	8.25 Dia	31-1/2	CPLP-8I(Integral Stake)
	10.75 Dia	31-1/2	CPLP-10
	10.75 Dia	31-1/2	CPLP-10I(Integral Stake)
Fargo	8 x 8	38	UP-1520C
	8 x 8	44	UP-1620C
	8 x 12	27	UP-1720C
	8 x 12	44	UP-1820C
	10 x 10	27	UP-2320C
	10 x 10	38	UP-2220C
	10 x 10	43	UP-2420C
	10 x 16	37	UP-2520C
Inter-Alloys	7.75 x 11	24	C-24128-PH
	7.75 x 15	24	C-24168-PH
	7.75 x 11.5	24	**PM-24128-PH
	7.75 x 15.5	24	**PM-24168-PH
Nordic	8 x 8	44	PR-50, PR-55
	9 x 14	30	PR-149 (stake)
			PR-150 (stakeless)
Utility Products	8 x 8	38	UP 8HLP
	8 x 8	46	UP 8HP
	10-1/2 x 10-1/2	26	UP 10HLP
	16-1/2 x 10-1/2	36	UP 1016HLP
	10-1/2 x 10-1/2	42	UP 10HP
Vertex	8 x 14	30	SP 814
Western Power	8 x 8	30	*SP-8, DF-3 (dead-front)
	9 x 9	30	*SPMC-9-DF3
	9 x 9	30	SPM-90, DF-3 (stakeless)
	9 x 14	30	*SPMC-14-DF3
	9 x 14	30	SPM-140, DF-3 (stakeless)

*Furnished with stake.

**Pole mounted

Conditional List

U gu(1)
July 1984

U gu - Power pedestal
Refer to Drawings UK6 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power
Pedestals," U-6

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>ITT Blackburn</u>		
Molded polyethylene with galvanized steel cover and ground lug. Catalog No. SDR-2PG	991 5/11/72	To obtain experience
<u>Pen-Cell</u>		
Molded polyethylene with galvanized steel or plastic cover Catalog No. PE-20-REA Polycarbonate Box cover Catalog No. AG-20-6-REA	983 1/20/72 1156 2/1/79 1191 7/24/80	To obtain experience
<u>Burndy</u>		
Molded polyethylene with galvanized steel cover. Catalog No. URD20G23	997 7/27/72	To obtain experience
<u>Fargo</u>		
HDPE, B-100R Series ABS, B-200R Series	1140(6/1/78) 1166(6/21/79)	To obtain experience
<u>Carson</u>		
Molded polyethylene with plastic cover Catalog Nos. 1324-12B and 1730-12B	1109 3/3/77	To obtain experience
<u>Associated Plastics</u>		
Molded polyethylene with galvanized steel or plastic cover Catalog Nos. 1730-1, 3; 1324-1, 3	1113 4/28/77	To obtain experience

U hr - Secondary tap or splice cover, submersible

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Bishop	Splice-Wrap
Blackburn	Type DBS
Elastimold (ESNA)	Style 86
Electrical Spec. Prod.	TSC Series
Homac	FSS Series
Kearney	Aqua-Seal Kit
3M	PST Series 8400
RTE	Aqua-Guard

Heat Shrink Tubing (with sealant throughout)

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
AMP	Black heat-shrink tubing
Electrical Spec. Prod.	HSB
Panduit	Heat shrink insulating cover
Raychem	WCS cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products

U hv - Cable, Underground
15 kV Cable

Applicable Specification: REA Specification U-1
Conductor :Copper or Aluminum
 #2 AWG through 1000 kcmil
Insulation :High Molecular Weight (HMW) or Crosslinked (XL)
 Polyethylene or Ethylene Propylene Rubber (EPR)
Neutral :Copper Concentric Neutral

<u>Manufacturer</u>	<u>Insulation</u>	<u>Flat Strap Neutral Available</u>	<u>Stabilized Neutral Design*</u>
Cablec	XL	Yes	
Conductor Prod.	HMW or XL	Yes	Ridg-lok
Essex	XL	Yes	
Hendrix	HMW or XL	No	Neu-lok
Okonite	XL or EPR	Yes	
Pirelli	HMW or XL	Yes	STA-SERVE
Reynolds	HMW or XL	Yes	Secure-Neutral
Rome	HMW, XL or EPR	Yes	Serve-Lock Counter Secure
Southwire	XL	No	

*Accepted design meeting the requirements of paragraph 7.5.2. of REA Specification U-1, for a minimum neutral with a maximum lay.

U hv - Cable, Underground
25 kV Cable

Applicable Specification: REA Specification U-1
Conductor : Copper or Aluminum
 #1 AWG through 1000 kcmil
Insulation : High Molecular Weight (HMW) or Crosslinked (XL)
 Polyethylene or Ethylene Propylene Rubber (EPR)
Neutral : Copper Concentric Neutral

<u>Manufacturer</u>	<u>Insulation</u>	<u>Flat Strap Neutral Available</u>	<u>Stabilized Neutral Design*</u>
Anaconda Ericsson	XL	No	
Cablec	XL	Yes	
Conductor Prod.	HMW or XL	Yes	Ridg-lok
Essex	XL	Yes	
Hendrix	HMW or XL	No	Neu-lok
Okonite	XL or EPR	Yes	
Pirelli	HMW or XL	Yes	STA-SERVE
Reynolds	HMW or XL	Yes	Secure-Neutral
Rome	HMW, XL or EPR	Yes	Serve-lock Counter-Secure
Southwire	XL	No	

*Accepted design meeting the requirements of paragraph 7.5.2. of REA Specification U-1, for a minimum neutral with a maximum lay.

U hv - Cable, Underground

600 Volt Cable

Applicable Specification: REA Specification U-2
Conductor : Copper, #4 AWG and larger
Aluminum, #2 AWG and larger
Insulation : Cross-linked polyethylene (XLPE)

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Ericsson	Copper or Aluminum
Cablec	Copper or Aluminum
Collyer	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phelps Dodge	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The manufacturers shown above have indicated that their 600 volt cable is suitable for use on 480 volt corner grounded delta circuits.

The above cable may be supplied with UL label for Type USE.

U hv - Cable, Underground

600 Volt Multi-Conductor Cable

Applicable Specification: REA Specification U-2
Conductor : Copper, #4 AWG and larger
Aluminum, #2 AWG and larger
Insulation : Cross-linked polyethylene (XLPE)
Cable Configuration : 3 Insulated Conductors Triplexed

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Ericsson	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The above cable may be supplied with UL label for Type USE.

U hv - Cable Underground
15 kV and 25 kV Concentric Neutral Jacketed Cable

Applicable Specification: REA Specification U-1
Conductor : Copper or Aluminum
 For 15 kV Cable, #2 through 1000 kcmil
 For 25 kV Cable, #1 through 1000 kcmil
Insulation : High Molecular Weight (HMW) or Crosslinked (XL)
 Polyethylene or Ethylene Propylene Rubber (EPR)
Neutral : Copper Concentric Neutral
Jacket : High Molecular Weight (HMW) Polyethylene

<u>Manufacturer</u>	<u>Insulation</u>
Conductor Products, Inc.	HMW or XL
Hendrix	HMW or XL
Okonite	XL or EPR
Reynolds	HMW or XL

NOTE: For grounding purposes insulated jacketed cables must be treated like overhead lines, i.e., at least four ground rods must be installed per mile in accordance with the NESC. (This does not include service grounds, etc., but does include equipment grounds.) Additional grounding may be necessary in soils with higher resistivity. In splices or tap connections, a good seal should be achieved to exclude moisture.

It is recommended that any place that the jacketing is cut (including the connections to ground rods), it be done above ground in a pedestal.

U hv - Cable, Underground
(15 or 25 kV cable)

TREE RETARDANT

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Conductor Products</u>		
DFDA 6202 HMW	1148 (9/28/78)	To obtain experience
	1198 (10/23/80)	
	1274 (1/9/84)	
<u>Essex</u>		
DFDA 6202 HMW	1236 (6/10/82)	To obtain experience
<u>Hendrix</u>		
DFDA 6202 HMW	1151 (11/16/78)	To obtain experience
	1198 (10/23/80)	
HFDE-4202 (XL)	1281 (5/31/84)	To obtain experience
<u>Pirelli</u>		
DFDA-6202 HMW	1152 (12/7/78)	To obtain experience
	1202 (12/18/80)	
<u>Reynolds</u>		
Reynotree-U	1151 (11/16/78)	To obtain experience
(DFDA-6202 HMW)	1196 (9/18/80)	
HEFD-4202 (XL)	1255 (3/24/83)	
	1258 (5/5/83)	
<u>Rockbestos Company</u>		
HFDA-4202 (XL)	1279 (5/3/84)	To obtain experience
<u>Rome Cable</u>		
UCAR TR-7521 LLDHMM	1271 (12/15/83)	To obtain experience
UCAR TR-4202 (XL)	1279 (5/3/84)	
<u>Southwire</u>		
UCAR TR-4202 EC XL	1284 (8/2/84)	To obtain experience

U hw
July 1984

U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

<u>Manufacturer</u>	<u>Size (inches)</u>	<u>Danger Sign Catalog No.</u>	<u>Caution Sign Catalog No.</u>
Brady*	7 x 10 10 x 14	46133 46131	46043 46041
Dun-Lap*	7 x 10 10 x 14 14 x 20 20 x 28	DL-D710 DL-D1014 DL-D1420 DL-D2028	DL-C710 DL-C1014 DL-C1420 DL-C2028
Eastern Metal*	7 x 10 10 x 14 14 x 20 20 x 28	REA 12-1-710 REA 12-1-1014 REA 12-1-1420 REA 12-1-2028	REA 12-2-710 REA 12-2-1014 REA 12-2-1420 REA 12-2-2028
Lyle*	7 x 10 10 x 14 14 x 20 20 x 28	UM12-1-710 UM12-1-1014 UM12-1-1420 UM12-1-2028	UM12-2-710 UM12-2-1014 UM12-2-1420 UM12-2-2028
May Advertising	7 x 10 10 x 14 14 x 20 20 x 28	MY710C MY1014C MY1420C MY2028C	MY710B MY1014B MY1420B MY2028B
For pressure sensitive decal add "D" prefix to catalog number.			
Truck Sign Service*	7 x 10 10 x 14 14 x 20 20 x 28	TSD-710 TSD-1014 TSD-1420 TSD-2028	TSC-710 TSC-1014 TSC-1420 TSC-2028
Lem	7 x 10 10 x 14 14 x 20	LSS-1400 LSS-1401 LSS-1402	LSS-1500 LSS-1501 LSS-1502

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
Style 650-S, straight splice (15 kV)	1016 5/10/73	To obtain experience.
Style 650-Y, Y-Splice (15 kV)		
Style K650-S, straight splice (25 kV)		
Style K650-Y, Y-splice (25 kV)		
Style M650S, straight splice (35 kV)	1064 5/1/75	To obtain experience.
<u>ITT Blackburn</u>		
15 kV - S65B straight splice	1131	To obtain experience.
25 kV - S65C straight splice	1/19/78	
<u>RTE</u>		
15 kV - 2604904B Series straight splice (MPS-600)	1122 9/8/77	To obtain experience.
25 kV - 2604905B Series straight splice (MPS-600)		

Conditional List
U ja(1)
October 1984

U ja - Transformer Pad

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Associated Plastics</u> API 4000 Series RPM	1191 7/24/80 1194 9/4/80	To obtain experience
<u>Carolina Dielectrics</u> Model 0502-1 Fiberglass Size: 40" x 44"	1000 9/14/72	To obtain experience
<u>Chance</u> C107-0162 and C107-0171 Fiberglass Size: 40" x 44"	994 6/29/72	To obtain experience
<u>Cyclo</u> Dwg. No. 730126-2 Molded polyethylene Size: 42" x 42"	1147 9/14/78	To obtain experience
<u>Electri-Glass</u> Fiberglass LP-4145 41" x 45"	1286 9/6/84	To obtain experience
<u>Heil Rotomold, Inc.</u> T Series* High density polyethylene	1228 2/4/82	To obtain experience
<u>Highline</u> HL-46B, Fiberglass Size: approx. 42" x 42"	989 4/13/72	To obtain experience
<u>Plastic Structures</u> No. 40402012 Molded polyethylene Size: 40" x 40"	997 7/27/72	To obtain experience
<u>Quazite Corp.</u> Composolite - PH Series	1141 6/15/78 1267 10/13/83	To obtain experience
<u>Thermodynamics</u> Poly-Pad, PR Series* Molded polyethylene	998 8/17/72 1009 2/1/73	To obtain experience

*Order by catalog number and size

WATTMETERS, RECORDING

	<u>Meeting No. and Date</u>	<u>Conditions</u>
General Electric	851 10/13/66	To obtain operating experience.
	<u>Type</u> <u>Description</u>	<u>Group*</u>
CH-11	3 ϕ watt-var recorder, ink or inkless, portable, motor or clock	II
CF-11	3 ϕ watt-var recorder, inkless, portable, motor	IV

*Refer to Part III - General Plant Items for explanation of groups.

Revenue Metering Test Equipment

	<u>Instrument</u>	<u>Type or Model</u>	<u>Group*</u>
Eastern Specialty	Current tranformer field test kit	1012	II
	Meter test board	990A	I
	Meter test kit	G-50	II
General Electric	Portable standard	IB-10	II
Knopp, Inc.	Loading Transformer	CL-6	II
	Watthour meter testing equipment	TE-14	I
	Automatic watthour meter test system	ST-15	I
	Current transformer testing system	KCTS	I
	Voltage transformer testing system	KVTS	I
Sangamo	Portable standard	J-33	II
		J-44	II
States Company	Watthour meter test table	HAPBL	I
	Photoelectric watthour meter tester	150	I
	Meter test kit	KFLD	II
	Demand meter test table	FDM	I

*Refer to "Part III - General Plant Items" for explanation of groups.

GP - Revenue Metering Test Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Knopp, Inc. "Uniload" Portable Test Set FS-9	1287 9/27/84	To obtain experience.

RESISTANCE TESTS SETS

	<u>Type</u>	<u>Description</u>	<u>Group</u> [*]
Associated Research	255A	Ground resistance	IV
	263A	meter (vibroground)	IV
	2101A	Ohmmeter, insulation resistance tester	IV
Biddle	21159	Ohmmeter, insulation resistance tester	IV

^{*}Refer to "Part III - General Plant Items" for explanation of groups.

